REMARKS

Please add the following remarks to supplement those of the Response of September 9, 2004.

Vazquez et al. The illustration of Vazquez Figure 2 (last box) and Figure 3 (first box) is merely illustrative and does not teach the feature of applicant's invention of a commonly scaled abscissa (x-axis) for both the surface card and the pump card. Vazquez schematically illustrates approximately equal stroke lengths for a surface card and a pump card. Vazquez's actual illustration shows a longer stroke for the pump card than for the surface card.

In general for deep wells, as was described in the September 9, 2004 response, the pump card will have a shorter stroke length than that of the surface card. Applicants' Figure 6 illustrates such a relationship.

Applicants want to supplement the remarks of September 9, 2004 by pointing out that for shallow wells, the pump card stroke length and the surface card stroke length are generally close to the same value with the surface card stroke length being the longer of the two. Nevertheless, it is possible through the use of fiberglass rods, sinker bars at the pump, and Class III geometry pumping units (e.g., Lufkin Mark II) at moderate speeds to obtain a longer pump stroke than a surface stroke as the illustration of Vazquez shows. Applicants maintain that Vazquez's plots are merely illustrative of generating a surface card and a pump card but do not illustrate displaying such plots at a pumping unit. Furthermore, Vazquez's illustration does not teach display of actual cards plotted with same scale along the x-axis.

In summary, Vazquez fails to teach that the stroke length for the pump card and the surface card can be different depending on the depth of the well and the well equipment.

Vazquez provides no teaching of the desirability of providing an <u>actual</u> surface card and an <u>actual</u> pump card plotted to a commonly scaled abscissa at the pumping unit.

<u>Purcupile</u>. Applicants point out that Purcupile's Figure 5 does not show a traditional surface dynamometer card (surface load vs. polished rod position). Rather, the abscissa of Purcupile's Figure 5 is Rod Location Pulse Count. Although polished rod position and polished rod location pulse count are related, the relationship is not linear. Accordingly, using the pulse count for the horizontal scale would result in a very distorted card shape. Such a display as shown in Figure 5 to one of ordinary skill in the art of beam pumping unit controls, would not be viewed as a <u>typical surface dynamometer card</u>. This is because of the reciprocating nature of a beam pumping unit. A significant amount of crank rotation occurs at the ends of the stroke, but the polished rod moves very little, because the velocity is decreasing, followed by a reversal in direction and speed increase in the opposite direction. In other words, there is a dwell at the ends of the stroke.

An additional observation of Purcupile's "surface card" can be made to show that it is not a typical surface dynamometer card. Figure 5 of Purcupile shows an equal number of motor pulses on the pumping unit upstroke (i.e., from point 108 clockwise to point 102 [49 pulses]) as on the downstroke (i.e., from point 102 clockwise to point 108 [49 pulses]). It is rarely true for modern beam pumping units that the upstroke crank rotation (in degrees) is the same as the downstroke crank rotation. In general the upstroke crank rotation is about 185 to 210 degrees. Thus, Purcupile's assumption of equal upstroke and downstroke crank rotation angles would further distort the look of a traditional surface card.

In summary, Purcupile does not show a traditional surface card (polished rod load vs. polished rod position) but rather shows polished rod load vs. rod location pulse count.

Respectfully submitted,

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